resemblance to appendicitis proper is in cases so great that such an inflamed appendix epiploica has been removed, the surgeon believing he was removing the appendix vermiformis. Hansemann has shown that these diverticula are not always so innocent, but may become the means of causing tension necrosis and serious peritonitis. It is further evident that the adhesions set up by such inflammatory processes may result in anchoring the bowel, interfering with its function, and may form bands beneath which the intestine may be caught and strangulated.

The diagnosis is not always to be made; i. e., a differential diagnosis from certain forms of appendicitis from some other inflammatory tumors and from new growths of the bowel wall. A history of recurrent attacks of inflammation on the left side without tenderness over the base of the appendix vermiformis; a history of chronic and severe constipation, the formation of a tender tumor in the left iliac fossa would strongly suggest an infection of this character. The common tumor in the wall of the large bowel is the adeno-carcinoma which contracts and causes an annular constriction of the bowel. The symptoms here are those of carcinoma of the internal layers, but if the tumor be of slow growth there may be no symptoms beyond those consequent upon a gradually increasing obstruction. If the carcinoma is low down, it is apt to impress its form on the fecal mass, and in turn to be lacerated by the passage of large masses, resulting in slight bleeding.

Even if in a given case an anatomical diagnosis cannot be made with certainty, the symptoms are apt to be sufficiently definite to furnish the indications for operative treatment.

Of the treatment little need be said, as it is evident that operative removal of the mass, with repair of the bowel, is the only rational procedure in the severe cases as a matter of necessity; in the mild cases, for the removal of adhesions and dangerous bands and the prevention of future serious trouble. The relief of the chronic constipation, which plays so prominent a role in the etiology, is not less important as a prophylactic measure.

THE CONSERVATIVE TREATMENT OF ACUTE APPENDICITIS.*

By A. W. MORTON, M. D., San Francisco.

THE SUBJECT of appendicitis has been more thoroughly discussed by medical men and the laity during the past decade than any other medical topic. Regardless of this, there still remains a wide difference of opinion in the treatment, and a grave mortality, which is evidence that we have not thoroughly mastered the subject. The disease is far more prevalent than is generally supposed. Observers have found on postmortem examinations that from 30 to 40 per cent give evidence of having had appendicitis during life.

In bringing this subject before you it is not that I have anything new to offer, but to make an appeal to be more conservative in the time you select to operate.

The disease of the appendix has been observed by many writers during the past century, but it was not accepted by the medical profession until 1886, when Dr. Fritz of Boston convinced them that most of the cases of peritonitis were caused by appendicitis.

The appendix is located in the right iliac fossa, and seldom wanders from that location. It is attached to the lower end and back part of the cecum, and is very similar in structure, except that it is poorly developed on account of not having any special function, and a poor blood supply. Its location corresponds to a point about two inches from the anterior superior spine of the illium directed to the umbilicus, known as McBurny's point.

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The causes of appendicitis have varied to suit the opinions of different authors, from foreign materials to a meat diet. The most rational cause is that of defective drainage from mechanical obstruction, or pre-existing disease, which leaves the appendix in an unhealthy condition, and makes a proper soil for the bacillus coli communis, or some pus infection, which, under ordinary conditions, would be harmless. Typhoid fever, dysentery, indigestion and many other diseases may act in preparing the way for the germ which is always associated with the disease. Appendicitis is generally divided into various classifications which simply represent different stages of the disease, whether it be catarrhal, suppurative or gangrenous.

The symptoms of acute appendicitis are of such marked character that any one who has had any experience with the disease should readily make a diagnosis. The four cardinal symptoms—pain, tenderness, gastro-intestinal disturbance and rigidity of the muscles—in conjunction with the constitutional symptoms, will be of great value. The pain is generally acute, and first felt in the region of the umbilicus, and radiating over the entire abdomen. After the pain lasts a few hours it becomes more fixed in the region of the appendix, and the tenderness soon becomes localized here. The disease is often ushered in by vomiting, which consists of the food in the stomach, and later the secretions from the upper part of the intestinal tract. The rigidity of the abdominal muscles over the appendix is a very valuable symptom, not only in making out the diagnosis, but differentiates it from other abdominal lesions. The pulse and temperature are valuable signals as to the condition of the patient, but only in conjunction with the cardinal symptoms are they valuable in arriving at a diagnosis.

The leukocytosis is of importance in conjunction with the other symptoms in not only arriving at a diagnosis, but differentiates it from other diseases, as typhoid fever. It is of much value in indicating the severity of the disease. J. Da Costa (1) claims when it reaches 20,000 or more that pus has formed, and requires immediate operation. I believe that 20,000 or more does not only indicate that pus has formed, but, in conjunction with other symptoms, that it has passed beyond the confines of the appendix, and we have an effusion into the peritoneal cavity, and is one of the symptoms that not only confirms the diagnosis, but should deter the surgeon from operation so long as the count remains above 20,000. The pulse remaining above 116 and the other symptoms exaggerated are special indications that operation should be postponed until the general condition is better. This is the hopeless class of patients which give the ever-ready surgeon his mortality. The surgeon generally says he will give the patient the last chance (operation), which is too often true.

Operation at this stage will generally find the pus free in the peritoneal cavity. You may succeed in removing the ruptured or gangrenous appendix, but not the infection, as it is now a constitutional sepsis, and not local. The infection has not only spread over the abdominal cavity, but the operation produces trauma of the peritoneum and omentum, which are the life preservers of the abdominal cavity, and it inhibits their action in antagonizing the infection, to say nothing of the depressing effect of the anesthetic.

Many of our best medical men and surgeons, as Osler, Deaver, Price and Murphy, have considered appendicitis a surgical disease at all stages, and have recommended operation as soon as diagnosed, regardless of the stage. I believe such teaching as this has and is doing a great injustice. Many physicians under unfavorable circumstances, and without the proper amount of experience, and often at the time the case becomes very serious, will operate, because they have been led to believe that surgery offers the only hope

of relief. There is possibly no place in which this advice has been more used or abused than in this country.

I believe all surgeons agree that to operate early in the disease and under favorable circumstances offers more hope than any other form of treatment; and that it is the only method which will cure the disease. The mortality at this time should be very low, as there is practically no danger of infection so long as the pus is confined to the appendix. I believe in not limiting this period to twenty-four or forty-eight hours, which is the preferable time in acute cases, but if the patient's condition is reasonably good, which is judged by the pulse, temperature, leukocytes less than 18,000, and the general symptoms which convince me that the pus is confined to the appendix, I always operate. If the patient has passed into the stage of sepsis, when the pus is no longer confined to the appendix, and it will be impossible to remove the sepsis, the pulse rapid, the abdomen tympanitic, vomiting, with all the local symptoms exaggerated, and leukocytes above 20,000, I do not operate, as it is this class of patients where we get the heavy mortality. McBurney has said, "Often the surgeon is called too late for an early operation, and too early for a late operation." The statistics of Richardson (2) in operation for acute appendicitis show a mortality of 18 per cent; Deaver (3), 16 per cent; Broca (4), 33 per cent.

If the experienced surgeons, under favorable surroundings, have this mortality, may we not expect even a heavier mortality with the less favorable ones, if acting under the same teachings? Surgeons seem to be a unit in the belief that acute inflammation should be treated by rest in every part of the body except the abdominal cavity; and here, under all conditions, we are to give cathartics, such as magnesia, which keep up the peristaltic action of the bowel, and constantly irritates the inflamed appendix, which will not only keep the effusion from becoming walled off, but may carry it over the general peritoneal cavity, and will even break down adhesions which have forrmed. In my opinion rest is especially indicated in the treatment of appendicitis, and I believe all acute cases can be carried through the attack and the patient operated upon in the intervals with a mortality less than 4 per cent, which has been the statistics of Ochsner (5).

This treatment is to give the patient nothing by the mouth in the way of food or cathartics until his condition makes the operation safe. All forms of food administered by the stomach have a tendency to start perstaltic action of the bowels. Water can generally be administered in small doses per mouth. If the patient is vomiting, gastric lavage should be used, which will stop the vomiting and relieve the pain and distress. The nourishment is kept up per rectum by using salt solution or some predigested foods in small quantities every few hours. If the lower bowel is full, I generally empty by enema. I have seldom found it necessary to keep up rectal nourishment longer than a week, as the patient's pulse, temperature and general vitality have improved by this time. During this period the patient is rendered more or less immune to the infection, and the pus is not so virulent, as it has been walled off and the patient has passed beyond the condition where operative procedure gives such mortality.

During the past two years I have treated forty-five patients with acute appendicitis (not chronic or recurrent cases); twenty-seven of the patients were operated upon during the first to the fifth day, with one death. Two were treated through the attack, and refused operation. Sixteen of the patients were treated from four days to two weeks, and then operated upon, with one fatality. The first fatality, a young man 22 years old, had been sick three days when he entered the hospital with acute appendicitis; pulse, 116; temperature, 103½; leukocytes, 27,000, and with all the local symptoms exaggerated with vomiting. Consultant demand immediate operation, which was done. We found a ruptured appendix, with a small amount of pus which was not walled off. The appendix was removed and drainage established; patient died five days later with general peritonitis. I am confident if this operation had been delayed and the patient treated by rest we would have saved the patient.

The second fatality was Mr. D, age 45. I saw him the second day of the attack, in consultation; patient was suffering with all the symptoms of appendicitis; immediate operation was advised, but refused; he was placed under the rest treatment, and improved by the end of the first week, when we insisted on operation, but were again refused. Patient was started on a liquid diet per mouth, but immediately began to grow worse; the food was stopped and rectal nourishment resorted to again, but his symptoms continued to grow worse. On the twelfth day of his illness I opened the abdomen and found the pus from an appendix abscess had burrowed beneath the liver. This is a type of a case in which the patient was in excellent condition for operation when first seen, and again at the end of the first week; after that the abscess began to wander, which was indicated by the renewal of the acute symptoms with an increased leukocytosis. This is one of the dangers we may meet in this form of treatment.

I take one history from the cases where operation was delayed on account of the severity of the disease. Miss M., age 21, had suffered several attacks of appendicitis, and had been sick three days when I was called in consultation. Patient had suffered very severe pain the night before, and had a dose of morphine to relieve her. Her temperature was 105½, pulse 125; abdomen very sensitive, and especially over the region of the appendix; leukocytes, 27,000; hemoglobin, 80. The patient was sent to hospital, placed on rectal nourishment and a little water per mouth. On the fourth day of the treatment pulse was 84, temperature 99, leukocytes 10,500. Patient's condition was so much improved that consultant thought we had been mistaken in the diagnosis. One day later abdomen was opened, we found abscess walled off, with entire appendix sloughed, which was removed in toto by lifting out with forceps, and the cavity drained. Patient made a complete recovery.

In all cases operated on after delay the diagnosis was confirmed. Before adopting this method of selecting the time for operation, I followed the accepted teachings, to operate when the diagnosis was made, and especially when the case appeared hopeless. When I found the appendix gangrenous, or a large quantity of pus free in the abdominal cavity, and following this a mortality, I satisfied my conscience that the patient could not have recovered with any other form of treatment.

I am convinced that the rest or Oschner treatment will assist the surgeon in carrying his delayed acute cases to a safe period for operation. The physician can safely treat his cases until he has proper surgical assistance.

REFERENCES.

1. *American Journal Medical Science*, November, 1901.
2. *Boston Medical and Surgical Journal*, January 9, 1902.
3. *Journal American Medical Association*, December 13, 1902.
4. *Journal American Medical Association*, No. 57, 1902.
5. Sections of Surgery and Anatomy, American Medicine Association, 1903.

Unimproved Chicago.

Medicine, in an interesting editorial, says that 80% of Chicago real estate is unimproved. This is certainly surprising, and many people who know their Chicago but casually may be skeptical or regard this as a typographical error for what should have been 98%.